IBM

# Release Notes
# IBM Nways Multiprotocol Switched Services (MSS) Server
# Version 2.1

IBM Corporation (Part Number 08L3346, EC E49027)
June 30, 1998

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# Chapter 1. General Changes, Procedures, and Restrictions

## MSS Server Hardware Platforms

There are two types of MSS Servers: the IBM 8210 Nways Multiprotocol Switched Services (MSS) Server (8210), which is a standalone product, and the IBM Multiprotocol Switched Services (MSS) Server Module (A-MSS Server Module).

**Note:** Unless explicitly stated, the term *MSS Server* applies to both the 8210 and the A-MSS Server Module.

The A-MSS Server Module was originally available as a double-wide (2-slot) module (FC 5300), which is installed as a module in the IBM 8260 Nways Multiprotocol Switching Hub (8260). This module has been replaced with a single-wide (1-slot) module (FC 5400), which is installed as a module in the 8260 or the IBM 8265 Nways ATM Switch (8265). MSS V2.1 will operate on all types of MSS Server.

## What's New in MSS Server V2.1?

**MSS Server V2.1** replaces MSS Server 2.0.1 and includes the following additional new functions:

LEC Security Enhancements

VLAN Port Filtering

Duplicate MAC address handling

Broadcast Manager IPX Server Farm Detection

Quality Of Service II for LANE

LANE Distributed Gateway

Banyan VINES and APPN over FDDI

Classical IP Peer Redundancy

Multicast Address Resolution Server (MARS) and Client

Data Link Switch

APPN High Performance Routing (HPR) over IP

**These items will be available in a future PTF:**

MPOA Server (beta now)

LANE Version II support (beta now)

FasTR

FDDI Bridging

The MSS Server V2.1 operational code and the corresponding firmware and configuration program can be obtained as explained in "Getting the Latest Information, Code and Fixes" on page 1-2.

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Most MSS Server V2.1 functions are already documented in the publications shipped with MSS Server 2.1. These release notes include additional information available since MSS Server V2.1 publications were published.

## Getting the Latest Information, Code and Fixes

Refer to the README file on the CD-ROM shipped with the MSS for information about code shipped on the CD-ROM.

**Note:** There are special instructions if you are loading the code from CD-ROM onto an AIX 3.2.5 machine.

You can get the latest MSS Server information, operational code, firmware, configuration program and fixes on the World Wide Web at the following URL:

**http://www.networking.ibm.com/nes/neshome**

To access the MSS Server V2.1 operational code on the World Wide Web, a valid userid and password is required. A userid and password is included with the MSS Server V2.1 CD-ROM.

For new installations, it is recommended that the latest code level be installed. Check the web page for updates more recent than the CD-ROM.

## MSS Server Books

The CD-ROM shipped with MSS Server V2.1 contains books for the MSS Server. Please refer to the *Multiprotocol Switched Services (MSS) Server: Read This First* (PN 02L0707) document included with the MSS Server V2.1 package for an explanation of how to use the books.

## Compatibility with 8260 and 8265

When plugged into an IBM 8265 Nways ATM Switch, the MSS Server Module requires Version 3.3.4 or later of the 8265 microcode.

When plugged into an 8260, the MSS blade requires CPSW microcode Version 2.5.2 or later.

## Compatibility Between MSS Server Hardware, Firmware and Software

Table 1-1 on page 1-3 shows the versions of MSS Server firmware, operational code, and configuration program that are compatible with the different MSS Server hardware platforms.

*Table 1-1. MSS Server Hardware, Firmware and Operational Code Compatibility*

| MSS Hardware | MSS Operational Code | | | | |
|---|---|---|---|---|---|
| | **1.0** | **1.1** | **2.0** | **2.0.1** | **2.1** |
| 8210-001 | | | | | |
| 32 MB | FW 1.0+<br>CP 1.0 | FW 2.0+<br>CP 1.1 | X<br>X | X<br>X | X<br>X |
| 64 MB | X<br>X | FW 3.0+<br>CP 1.1 | FW 3.0+<br>CP 2.0 | FW 3.0+<br>CP 2.0.1 | FW 3.0+<br>CP 2.1 |
| 2-Slot Blade | | | | | |
| 32 MB | FW 1.0+<br>CP 1.0 | FW 2.0+<br>CP 1.1 | X<br>X | X<br>X | X<br>X |
| 64 MB | X<br>X | FW 3.0+<br>CP 1.1 | FW 3.0+<br>CP 2.0 | FW 3.0+<br>CP 2.0.1 | FW 3.0+<br>CP 2.1 |
| 1-Slot Blade | | | | | |
| 64 MB | X<br>X | X<br>X | X<br>X | FW 3.1+<br>CP 2.0.1 | FW 3.1+<br>CP 2.1 |

**FW** = Firmware Level **CP** = Configuration Program Level **X** = Not Supported

## Upgrading to MSS Server V2.1

Upgrade to MSS Server V2.1 as follows:

1. Ensure that the MSS Server has 64 MB of memory.

   64 MB of memory is required for MSS Server V2.1. To determine the amount of memory installed in the MSS Server:

   a. Access the firmware console.

      The instructions to access the firmware console are included in the section "Using MSS Server Firmware" in the *MSS Server Interface Configuration and Software User's Guide*.

   b. Select **Manage Configuration** and note the memory installed in the MSS Server.

   c. If the MSS Server has less than 64 MB of memory, upgrade to 64 MB of memory. See "Upgrading MSS Server Memory to 64 MB" on page 1-5 for details. Do not proceed further unless 64 MB of memory is installed in the MSS Server.

   d. If the MSS has 64 MB of memory, proceed to the next step.

2. Upgrade MSS Server firmware to 3.x.

   Older versions of the firmware (1.x and 2.x) will not work with MSS Server V2.1 This is because MSS Server V2.1 requires support for dynamic linking and loading of software modules, which is provided in version 3.0 or higher of the

MSS Server firmware. Also, the single-wide A-MSS Server Module has new hardware that is only supported by firmware 3.1+.

a. To determine the firmware version of the MSS Server,

   1) Access the firmware console.

      The instructions to access the firmware console are included in the section “Using MSS Server Firmware” in the *MSS Server Interface Configuration and Software User’s Guide*.

   2) The firmware version is displayed in the upper left corner of the console.

b. If the firmware version is 1.x, upgrade the firmware to version 2.0 before proceeding to the next step. See “Upgrading MSS Server Firmware” on page 1-8. for details on upgrading the firmware.

   **Note:** Firmware 2.0 is required as an intermediate step in migrating to firmware 3.x because the old firmware (1.x) will not recognize the format of the new firmware (3.x).

c. If the firmware version is 2.0, upgrade the firmware to 3.2. See “Upgrading MSS Server Firmware” on page 1-8. for details on upgrading the firmware.

d. If the firmware version is 3.0 and the MSS Server is a single-wide A-MSS Server Module, upgrade the firmware to 3.1. See “Upgrading MSS Server Firmware” on page 1-8. for details on upgrading the firmware.

e. If the firmware version is 3.0 and the MSS Server is not a single-wide A-MSS Server Module, you may upgrade the firmware to 3.2, but it is not required. See “Upgrading MSS Server Firmware” on page 1-8. for details on upgrading the firmware.

3. Upgrade MSS Server operational code to V2.1

   a. To determine the operational code version of the MSS Server:

      1) Access the MSS Server console. This is described in the *MSS Server Interface Configuration and Software User’s Guide*.

      2) At the * prompt, type **talk 6**.

      3) At the Config> prompt, type **boot**.

      4) At the Boot Config> prompt, type **list**. Note the bank that contains the active image.

      5) At the Boot Config> prompt, type **describe**. Note the version and PTF level of the bank that contains the active image.

   b. If the operational code version is less than 1.1 PTF 4, upgrade the operational code to version 1.1 (PTF 4 or higher) before proceeding to the next step. See “Upgrading MSS Server Operational Code” on page 1-9 for details on upgrading the operational code.

      **Note:** MSS Server operational code 1.1 (PTF 4 or higher) is required as an intermediate step to upgrading to MSS Server V2.1. This is so that the new MSS Server operational code (V2.1) can be loaded using the current operational code. Without MSS Server operational code 1.1 (PTF 4 or higher), the new MSS Server operational code (V2.1) files could only be loaded one at a time via Xmodem, which is slow.

c. If the operational code version is 1.1 (PTF 4 or higher), upgrade the operational code to version V2.1. See “Upgrading MSS Server Operational Code” on page 1-9 for details on upgrading the operational code.

d. If the operational code version is 2.0, upgrade the operational code to version V2.1. See “Upgrading MSS Server Operational Code” on page 1-9 for details on upgrading the operational code.

4. Upgrade MSS Server Configuration Program to V2.1.

   If you plan to use the Configuration Program to create configurations for the MSS Server, then you need to upgrade your existing Configuration Program to the level that supports the MSS Server V2.1. See “Getting the Latest Information, Code and Fixes” on page 1-2 for instructions about obtaining the Configuration Program for MSS Server V2.1. See “Installation” on page 4-1 for instructions about installing the new Configuration Program.

5. Upgrade MSS Server configuration files.

   If you plan to use the Configuration Program to manage MSS Server configurations, then you should migrate the existing configuration database (cdb) file to the new release format. See “Migrating Downlevel Configuration Files” on page 4-3 for instructions about migrating configuration files created with a previous version of the configuration program.

6. Transfer the updated configuration file to the MSS Server.

   There are three ways to transfer the updated configuration file to the MSS Server:

   a. Using the configuration program.

      The configuration program can establish IP communication with the MSS Server and transfer the file to it. The instructions to do this are included in the *Configuration Program User's Guide*.

   b. Using the MSS Server operational code.

      The MSS Server operational code can be used to transfer a configuration file from a TFTP server to one of the MSS Server storage banks using **tftp get config** from the Change Management menu. The instructions to do this are included in the section “Performing Change Management Operations” in the *MSS Server Interface Configuration and Software User's Guide*.

   c. Using the MSS Server firmware.

      The MSS Server firmware can be used to transfer a configuration file from a TFTP server to one of the MSS Server storage banks. The instructions to do this are included in the section “Change Management” in the *MSS Server Interface Configuration and Software User's Guide*.

## Upgrading MSS Server Memory to 64 MB

To upgrade MSS Server memory to 64 MB:

1. Order 64-MB MSS Server memory (feature code 5301).
2. Ensure that the current level of firmware is 3.0 or higher.
   a. To determine the firmware version of the MSS Server,
      1) Access the firmware console.

The instructions to access the firmware console are included in the section “Using MSS Server Firmware” in the *MSS Server Interface Configuration and Software User’s Guide*.

2) The firmware version is displayed in the upper left corner of the console.

b. If the firmware version is 1.x, upgrade the firmware to version 2.0 before proceeding to the next step. See “Upgrading MSS Server Firmware” on page 1-8. for details on upgrading the firmware.

**Note:** Firmware 2.0 is required as an intermediate step to upgrading the firmware to version 3.x because the older firmware (1.x) will not recognize the format of the new firmware (3.x). Firmware 3.x is required to support 64-MB memory.

c. If the firmware version is 2.0, upgrade the firmware to 3.2. See “Upgrading MSS Server Firmware” on page 1-8 for details on upgrading the firmware.

d. If the firmware version is 3.0 and the MSS Server is a single-wide A-MSS Server Module, upgrade the firmware to 3.2. See “Upgrading MSS Server Firmware” on page 1-8 for details on upgrading the firmware.

e. If the firmware version is 3.0 and the MSS Server is not a single-wide A-MSS Server Module, you may upgrade the firmware to 3.2, but it is not required. See “Upgrading MSS Server Firmware” on page 1-8 for details on upgrading the firmware.

3. Once the 64-MB memory modules are physically installed, you **may** have to re-format the PCMCIA hard drive. You should re-format the PCMCIA hard drive if ***any*** of the following conditions apply:

   The PCMCIA hard drive part number is 85H6367.

   The PCMCIA hard drive part number is 85H8713.

   The PCMCIA hard drive part number is 86H2261.

   The label on the PCMCIA hard drive is “Version 1 R1.0.”

   The label on the PCMCIA hard drive is “Version 1 R1.0 PTF 1.”

   If the above conditions do not apply, then the memory upgrade procedure is complete and you should skip the remaining steps.

   **Attention**

   The PCMCIA hard drive has a reserved area where the MSS Server can dump its memory if it crashes. These dumps are used by IBM Service Personnel to diagnose problems. Based on when the PCMCIA hard drive was manufactured, it may have to be re-formatted to accommodate a 64-MB memory dump.

   If the PCMCIA hard drive is not capable of storing a 64-MB memory dump and a MSS Server with 64 MB of memory dumps its memory to the hard drive, operational code and configuration files on the hard drive will be destroyed.

   If you have determined that you need to re-format the PCMCIA hard drive, then use the following to re-format it:

   a. Ensure that backup copies of the operational code images and configuration files are available. You can get the operational code from the

World Wide Web as described in “Getting the Latest Information, Code and Fixes” on page 1-2. You can save the configuration files using the Configuration Program as described in the *Configuration Program User's Guide*.

If there are any operational code images and configuration files in bank A or B, they will be destroyed when the PCMCIA hard drive is re-formatted. Bank F is in flash memory and will remain unaffected. It is recommended that you have backups of the operational code images and configuration files for all the banks (A, B and F) before proceeding to the next step.

b. If the MSS Server is configured to use the code and configuration in bank A or B, then you can use Bank F as a temporary holding area while the PCMCIA hard drive is being re-formatted.

   Once the re-formatting is complete, bank F can be copied back into bank A or B instead of loading over the network or serial port. Copying code and configurations between banks is much faster than reloading over the network or serial port.

   If the MSS Server is configured to use the code and configuration in bank A or B, then use the following procedure:

   1) Access the firmware console.

      The instructions to access the firmware console are included in the section “Using MSS Server Firmware” in the *MSS Server Interface Configuration and Software User's Guide*.
   2) Copy the contents of the PENDING bank (assume bank A) to bank F.

      The instructions for copying between banks are included in the section “Change Management Functions” in the *MSS Server Interface Configuration and Software User's Guide*.
   3) Re-format the PCMCIA hard drive.

      The instructions for re-formatting the hard drive are included in the section “Preparing the Hard Disk” in the *MSS Server Interface Configuration and Software User's Guide*.
   4) Copy the contents of Bank F to the bank from which you want the MSS Server to load (assume bank A).

      The instructions for copying between banks are included in the section “Change Management” in the *MSS Server Interface Configuration and Software User's Guide*.
   5) Re-start the MSS Server.
   6) Restore the contents of the other banks (B and F).

      The instructions for loading operational code images and configuration files are in the section “Change Management” in the *MSS Server Interface Configuration and Software User's Guide*.

c. If the MSS Server is configured to use the code and configuration in bank F, then use the following procedure:

   1) Access the firmware console.

      The instructions to access the firmware console are included in the section “Using MSS Server Firmware” in the *MSS Server Interface Configuration and Software User's Guide*.
   2) Re-format the PCMCIA hard drive.

The instructions for re-formatting the hard drive are included in the section “Preparing the Hard Disk” in the *MSS Server Interface Configuration and Software User’s Guide*.

3) Re-start the MSS Server.
4) Restore the contents of banks A and B.

   The instructions for loading operational code images and configuration files are in the section “Change Management” in the *MSS Server Interface Configuration and Software User’s Guide*.

## Upgrading MSS Server Firmware

MSS Version 2.1 provides a new level of MSS Firmware, Version 3.2. Refer to Table 1-1 on page 1-3 for the firmware level requirements for each MSS version and platform.

To upgrade the MSS Server firmware,

1. Get the appropriate level of MSS Server firmware as explained in “Getting the Latest Information, Code and Fixes” on page 1-2.
2. Update the firmware.

   The new firmware can be loaded using TFTP, Xmodem, or a Local File Copy from the current firmware console. This procedure is described in the section “Updating System Firmware” in the *MSS Server Interface Configuration and Software User’s Guide*.

**Attention**

1. If the current firmware version is 1.x, and you plan to dial into the MSS Server over the modem interface, then you must do the following before dialing into the MSS Server’s modem interface:
   a. Disconnect the serial cable.
   b. Reboot the MSS Server.
   c. Wait approximately 2 minutes.

   If the above steps are not followed, the console screen will not be displayed.
2. If the current firmware version is 2.0 or less, and you plan to use the Local File Copy method to update the firmware to version 3.x, then the firmware should be placed on the hard drive in the root directory with a filename of *.IMG (eg. FIRM.IMG).
3. If the current firmware version is 3.0 or 3.1, and you plan to use the Local File Copy method to update the firmware to version 3.2, then the firmware can be placed on the hard drive in the root directory with any filename.

## Upgrading MSS Server Operational Code

To upgrade the MSS Server operational code,

1. Get the appropriate version of MSS Server operational code as explained in "Getting the Latest Information, Code and Fixes" on page 1-2.
2. Update the operational code.

   There are two ways to update the operational code:

   a. It can be done in-band using the operational code as described in the section "Performing Change Management Operations" in the *MSS Server Interface Configuration and Software User's Guide*.

      **Note:** If you are updating the MSS Server operational code to V2.1 in-band using the current operational code, then the current operational code must be at version 1.1 PTF 4 or higher. MSS Server V2.1 operational code is shipped as multiple files. These files get automatically loaded when the tftp get load modules command is used from the Change Management menu.

   b. It can also be done from firmware using Change Management as described in the section "Using MSS Server Firmware" in the *MSS Server Interface Configuration and Software User's Guide*.

      **Note:** If you are updating the MSS Server operational code to V2.1 using the current firmware, then the current firmware must be at version 3.0 or higher. Older versions of the firmware (1.x and 2.x) will not work with MSS Server V2.1 This is because MSS Server V2.1 operational code is shipped as multiple files and requires support for dynamic linking and loading of software modules. This support is provided in firmware version 3.0 and higher. Alternatively, the operational code could be loaded from firmware using Xmodem one file at a time, but that is very slow.

## Migration Considerations for the Single-wide A-MSS Server Module

The 8210-001 and the double-wide A-MSS Server Module have internal flash storage and a plug-in PCMCIA hard drive. The flash and the hard drive can be used to store MSS Server operational code images and configurations. The single-wide A-MSS Server Module has an internal hard drive and an optional plug-in PCMCIA flash card.

## Transferring Configurations from a PCMCIA Hard Drive to the Internal Hard Drive

To transfer a configuration from the PCMCIA hard drive of a 8210-001 or double-wide A-MSS Server Module to a single-wide A-MSS Server Module's internal hard drive, use the following procedure:

1. Make sure the single-wide A-MSS Server Module operational code is up and running. When the operational code is running, you will see the * prompt on the MSS Server console.

**Attention**

DO NOT insert the old PCMCIA hard drive into the single-wide A-MSS Server Module unless the operational code is up and running.

Inserting the PCMCIA hard drive into the single-wide A-MSS Server Module and then starting the MSS Server can corrupt the operational code images and configuration files on the internal hard drive.

2. Insert the PCMCIA hard drive into the right PCMCIA slot.
3. At the * prompt, type **talk 6**.
4. At the Config> prompt, type **boot**.
5. At the Boot Config> prompt, select **IMPORT/EXPORT from PCMCIA hardfile**.

   **Note:**

   The **IMPORT/EXPORT from PCMCIA hardfile** option is displayed on the Boot Config> menu only when the PCMCIA hardfile is actually inserted into the single-wide A-MSS Server Module.
6. At the Import/Export config> prompt, select **IMPORT Config File**.
7. Select desired Bank and Config to import from PCMCIA Hardfile.
8. Select desired Bank and Config on internal hardfile as destination.

   The configuration will be copied to the internal hardfile.
9. At the Import/Export config> prompt, type **exit**.
10. Remove the PCMCIA hard drive from the PCMCIA slot.

## Transferring Configurations from a PCMCIA Hard Drive to the PCMCIA Flash Card

To transfer a configuration from the PCMCIA hard drive of a 8210-001 or a double-wide A-MSS Server Module to a single-wide A-MSS Server Module's PCMCIA flash card:

1. Follow the procedure described in "Transferring Configurations from a PCMCIA Hard Drive to the Internal Hard Drive" on page 1-9 to first transfer the configuration from the PCMCIA hard drive to the internal hard drive.
2. Insert the PCMCIA flash card into the left PCMCIA slot.
3. Format the PCMCIA flash card as described in "Preparing the PCMCIA Flash Card" on page 1-11.
4. At the MSS Server console * prompt, type **talk 6**.
5. At the Config> prompt, type **boot**.
6. At the Boot Config> prompt, type **copy config**.
7. Select appropriate bank and config on the internal hard file to copy from.
8. Select bank F (Flash Card) as the destination.

   The configuration will be copied to the flash card.

## Preparing the PCMCIA Flash Card

Before the PCMCIA flash card can be used to store the operational code or configuration images, it must be prepared as follows:

1. Insert the PCMCIA Flash Card into the left PCMCIA slot.
2. Access the firmware console.

   The instructions to access the firmware console are included in the section "Using MSS Server Firmware" in the *MSS Server Interface Configuration and Software User's Guide*.
3. Select **Utilities**.
4. Select **Prepare Hard Disk**.
5. Select **20 MB disk ID 0, Controller 1**.
6. Select **Yes** when prompted to confirm.
7. Once the flash is ready, the MSS Server will restart.

## Changes to MSS Server Default Configuration

The MSS Server is shipped with a default configuration that allows it to be initially accessed through the ATM interface via an Ethernet ELAN, Token-Ring ELAN, or Classical IP subnet.

In addition to the default configuration parameters documented in the manual, the MSS Server default configuration also includes a LECS (LAN Emulation Configuration Server). The LECS allows LECs (LAN Emulation Clients) to automatically connect to the correct ELAN. The default LECS configuration parameters are:

**LECS - General Parameters**

| | |
|---|---|
| *LECS ATM Device* | 0 |
| *LECS ESI* | 400082100001 |
| *LECS Selector (hex)* | 00 |

**LECS - Assignment Policies**

| | |
|---|---|
| *Priority* | 10 |
| *Policy* | By LAN Type |

# Chapter 2. MSS Server Firmware

Firmware version 3.0 or higher is required to support the MSS Server V2.1 operational code. The following notes are applicable to all versions of the MSS Server firmware.

## Using MSS Server Firmware

The following notes are applicable to using firmware in A-MSS Server Modules.

If XMODEM is used to load operational code, configuration file or firmware in A-MSS Server Modules, then you should:

1. Disable the ATM port that the A-MSS Server Module is plugged into.
2. Load the appropriate files.
3. Re-enable the ATM port.

The ATM port can be enabled and disabled from the 8260/8265 CPSW console.

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# Chapter 3. MSS Server Operational Code

## Using and Configuring NHRP

## Route Switching

### Guidelines for Setting Mode_for_Route_Switching

The *Mode_for_Route_Switching* parameter can be set to **bridged** or **routed**. If the ingress and egress ELANs are inter-connected with a transparent bridge (but not SuperELAN bridge), then Route Switching cannot be done and it must be disabled. If the ingress and egress ELANs are inter-connected with a SuperELAN bridge, then the Mode_for_Route_Switching must be set to bridged. If the ingress and egress ELANs are inter-connected with an IP router or a source-route bridge, then the Mode_for_Route_Switching must be set to routed.

### Interoperability with IBM 8281 in Source Route Bridge Networks

When Token-Ring Route Switching Clients are connected to ATM via IBM 8281s configured as source route bridges, the operational code in the IBM 8281 must be V2.4 or higher.

## Using and Configuring APPN

APPN user-defined COS is not configurable from the command line interface. The Configuration Program is the only means to configure user-defined COS.

## SuperELAN II

## TCP/IP Host Services

TCP/IP Host Services can be used to configure and monitor the MSS Server ASRT Bridge using TCP/IP even when IP routing is not enabled in the MSS Server. However, TCP/IP Host Services are not supported by the SuperELAN II bridge.

To configure and monitor a SuperELAN II bridge using TCP/IP when IP routing is not enabled in the MSS Server:

1. Create an additional LEC that is not a SuperELAN bridge port.
2. Configure the LEC to join any one of the ELANs in the SuperELAN.
3. Assign an IP address to this LEC interface.

## Using and Configuring IP

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## Distributed IP Gateway

The Redundant Default IP Gateway function was introduced in MSS Server Release 1.1 software. Redundant Default IP gateways provide a mechanism for configuring a backup IP gateway that takes over packet routing in the event the primary gateway fails. Distributed-redundant gateways (DRG) extend this concept by allowing all redundant gateways to participate as both a primary and backup at the same time. DRGs still provide the redundant IP gateway function but distribute the routing load across all active DRGs.

Distributed-redundant gateways can be used by end stations on ELANs with manually configured default gateway IP addresses. Clients are randomly assigned to one of the active DRGs, distributing the egress routing load across all active DRGs. If a DRG goes down, one of the remaining active DRGs automatically starts passing packets from the end stations originally assigned to a currently down DRG to other subnets. This solution allows a switch from one DRG to another to occur in a manner that is totally transparent to the end station. This is accomplished by using the same layer-2 and layer-3 addresses for all DRGs within a single subnet.

To configure a device with a distributed-redundant gateway:

1. Determine the IP address end stations used as the default gateway.
2. Determine at least two MAC addresses (one for each DRG) not used by any interface on the ELAN or legacy network bridged to the ELAN.
3. Select two devices (up to 20 may be used) to configure DRGs. Each DRG must have a LEC interface on the ELAN with a unique MAC address.
4. Configure a distributed gateway on each device using the “Add Distributed” option for IP. Make sure each DRG on every device has all DRG MAC addresses configured (the local DRG’s MAC address should be the primary and every remote DRGs’ MAC addresses should be configured as backup). This is accomplished by specifying the same IP address when using the “Add Distributed” command, but specifying a different MAC address for each add.

# Configuring ATM

## ATM Virtual Interfaces

All Physical ATM Interfaces should be configured before any ATM Virtual Interfaces are configured. If a second ATM adapter is added, you should first remove ATM Virtual Interface definitions, configure the second ATM Interface, then add back the ATM Virtual Interface(s). This restriction only applies if configuring from the console.

## Burned-In ESI Addresses

The burned in ATM adapter End System Identifier (ESI) is incorrectly read by the MSS Server. Duplicate burned-in ESIs are possible. If your configuration uses burned-in ESIs, it is recommended that all such adapters connected to a single ATM switch be checked for duplicates. Use talk 5, **int x** command, where x is the network number of the ATM adapter. If a duplicate is found, change the configuration to use configured ESIs in place of the burned-in.

## Using Multiprotocol Over ATM (MPOA)

The configuration program enables the MPOA function (beta) included in this release and auto-configures the function by default. Because it is beta, it is automatically disabled at run-time unless specifically enabled at the console under talk 6. The function can be enabled by changing the configuration under the MPOA protocol by entering MPS followed by ENABLE. You must perform this step each time the configuration is downloaded from the configuration program to re-enable MPOA.

## Configuring Bridging

IP Multicast Dynamic Protocol Filters (DPF) are not currently available. These filters can be configured by the configuration program, but the configuration will be ignored by the MSS Server. This limitation will be addressed in an upcoming PTF.

# Chapter 4. MSS Server Configuration Program

## Restrictions

This section discusses some important configuration program restrictions that you should be aware of.

## AIX Environment:

AIX Version 4.1 or later must be used. The AIX 3.2.5 CD-ROM file extension does not properly support mixed case file names.

## Windows Environment:

If TCP/IP is not installed and running before using the “Send Single” or “Send Multiple” functions, the Configuration Program will hang.

## OS/2 Environment:

A selection of 65535 colors when using OS/2 WARP will prevent the program bitmap from being displayed.

OS/2 Warp Version 4 is not supported.

## ELS (Event Logging System) Configuration

The Configuration Program does not support ELS configurations. To configure ELS, you must use the command line or web browser interface on the MSS Server. If ELS configurations are included in a configuration file that you retrieve from a MSS Server, the ELS configurations will be preserved when you send the configuration back to the MSS Server. Any changes to the ELS configurations made on the server after retrieving the configuration and before sending it back will be lost.

## Installation

## Installing from CD-ROM

To install the MSS Server Configuration Program from a CD-ROM, follow the instructions below, based on your operating system. In the examples below, “e:” refers to your CD-ROM drive.

### AIX

1. Change to the directory on the CD-ROM where the configuration program files are kept (e:/config).
2. Type **INSTALL.AIX**.

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### OS/2

1. Change to the directory on the CD-ROM where the configuration program files are kept (E:\CONFIG).
2. Type **os2inst**.

### WINDOWS 95

1. From the Start Menu, select **Run**.
2. Type **E:\CONFIG\INSTALL**.

### WINDOWS

1. Change to the directory on the CD-ROM where the configuration program files are kept (E:\CONFIG).
2. Type **Install**.

**Attention**

If you do not have WIN32 support, you will need to do the following:

1. Copy diskettes 1 and 2 from E:\CONFIG\WIN32 onto diskettes. The files for diskettes 1 and 2 are located in the sub-directories DISK1 and DISK2 respectively.
2. Insert diskette 1 into your diskette drive.
3. Type **A:\SETUP**.

## Installing from Diskettes

The MSS Server Configuration Program diskettes are not included with the MSS Server. If you prefer to install the configuration program from diskettes, diskette images are available for downloading from the Internet (see “Getting the Latest Information, Code and Fixes” on page 1-2). To install the configuration program using diskettes, follow the instructions in the *Configuration Program User's Guide*.

Diskette images are also available on the CD-ROM. You will see subdirectories DISK1 through DISK6 in the CONFIG directory on the CD-ROM.

1. Format 6 diskettes
2. Copy all the files in the subdirectory DISK1 onto the first diskette.
3. Repeat step 2 until you create all six diskettes from the above six subdirectories.
4. Place the first diskette into the diskette drive.

### AIX

1. Type **dosread -a INSTALL.AIX INSTALL.AIX**
2. Change the file permission. Type **chmod 550 INSTALL.AIX**
3. type **INSTALL.AIX**

### OS/2

1. Type **A:os2inst**

Follow the prompts that appear on the screen to complete the installation.

### WINDOWS 95

1. From the Start Menu, select Run
2. Type **A:\install**

### WINDOWS

1. From the FILE menu, select Run
2. Type **A:install**

## Migrating from a Previous Version of the Configuration Program

If you are migrating from an older version of the configuration program, you should consider the following:

ELAN TLV definitions are written to the file cfg.tlv in the configuration program installation directory. Do NOT delete this file if you are re-installing the configuration program. To successfully use existing configurations stored in a cdb file that have user-defined TLVs configured in an ELAN definition, the cfg.tlv file containing these TLV definitions is required. If you are installing the configuration program in a new directory, copy the cfg.tlv file to the new directory before starting the configuration program. To verify that no TLV information is missing, review entries on the TLV Definitions page for each ELAN.

## Migrating Downlevel Configuration Files

When you use the new Configuration Program with configuration database (cdb) files created by earlier versions of the Configuration Program, you will be prompted to migrate the cdb file to the new format.

1. Start the current version of the configuration program.
2. Select **OPEN CONFIGURATION** from the File menu. Select the old configuration from within the .cdb file. The configuration program will then ask if you wish to convert the configuration to the new format.
3. Select **SAVE CONFIGURATION AS** to save the configuration to a new file with a new name. Using the “Save configuration as” function allows you to keep the existing configuration file for future use.

If the only copy of the configuration is either in the MSS or in binary format, you must use the version of the configuration program that is compatible with the existing configuration to create a configuration database (cdb) file. Then, the new configuration program should be used to migrate this cdb file to the new format as explained above. To create a cdb file for the binary configuration file:

1. Start the previous version of the configuration program.
2. Select **READ CONFIGURATION** to read the existing configuration into the configuration program. Another way to load an existing configuration into the

program is to select **COMMUNICATION**, **SINGLE**, and then **RETRIEVE** from the Configuration menu.

3. Select **SAVE CONFIGURATION** from the File menu.
4. Save the configuration into a file with file extension .CDB.

## Using the Command Line Facility

The Command Line facility provides the capability to automate configuration operations by allowing the user to perform configuration operations using commands instead of the graphical user interface.

If you use the Command Line Facility, you cannot use the "*" character in a command.

## What's New in the Configuration Program

The Configuration program supports the new functions of the MSS Server as described in "What's New in MSS Server V2.1?" on page 1-1. These functions are also now supported:

Bridging over ATM Virtual Nets

ELAN default gateway list

Auto-configure of NHRP